

### Abstract of the Disclosure

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A genetically modified astrocyte for gene therapy is provided. The genetically modified astrocyte includes one or more stably introduced DNA sequences selected from DNA encoding a selectable marker, DNA encoding a poison pill, and DNA encoding a molecule useful for gene therapy. The genetically modified astrocyte may be produced utilizing plasmids and non-viral transfection methods, as are also provided by the subject invention. Methods for producing and utilizing the genetically modified astrocytes and regulating the engineered products, as well as kits thereof, are further provided.